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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,190	04/28/2005	Lucyna Pawlowska	CH8070US	5375

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Lanxess Corporation  
Law & Intellectual Property Department  
111 RIDC Park West Drive  
Pittsburgh, PA 15275-1112

EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1791

MAIL DATE	DELIVERY MODE
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08/20/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,190	<b>Applicant(s)</b> PAWLOWSKA ET AL.	
	<b>Examiner</b> DENNIS CORDRAY	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13, 46 and 47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 46 and 47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/4/08, 6/17/08</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

Applicant's submission of a copy of the previous correction of inventorship in US Provisional Application 60/434,213 has been considered and is convincing. The rejection under 35 U.S.C 102(f) has been withdrawn. The instant Application is entitled to the benefit of the prior-filed Provisional Application 60/434,213.

### ***Response to Arguments***

The following rejections have been withdrawn:

Claims 1-13, 46 and 47 under 35 U.S.C. 102(f), see reasons under the "Priority" heading above.

Claims 2, 6 and 46 under 35 U.S.C. 112, second paragraph.

Applicant's amendments and arguments filed 6/4/2008 have been fully considered but fail to overcome the remaining rejections over the cited prior art.

The claimed composition comprises an emulsion comprising alkenylsuccinic anhydride (ASA) or alkylene ketene dimer (AKD) particles suspended in an aqueous polymer solution, which consists of water and a vinyl addition or condensation polymers having anionic, non-ionic or amphoteric charge characteristics (hereinafter called first polymer). The composition also comprises a second component that can be cationic starches, non-ionic starches, anionic starches, water-soluble polymer, water or mixtures thereof. In further dependent claims, the composition also comprises a surfactant. In the combined composition, the emulsion of ASA or AKD and the first polymer, the

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second component polymer and the surfactant form one composition or emulsion, the first component is not separable from the second component and/or the surfactant. If the component (a) emulsion consists of the claimed sizing agent and polymer, then it cannot be combined with a second component or surfactant and still retain its identity. For instance, where the second component is a water-soluble polymer, how can the water soluble polymer be separated from the aqueous emulsion? In the case where the second component is water, how can the second component water be separate from the water in the aqueous emulsion?

Any aqueous composition comprising an emulsified ASA or AKD; vinyl addition or condensation polymers having the claimed anionic, non-ionic or amphoteric charge characteristics; any of the species claimed for the second component; and optionally one of the claimed surfactants reads on the claimed invention.

In Frolich's composition, the required cationic organic compound reads on the second component or the surfactant, while the anionic stabilizer (condensation or vinyl addition polymer) reads on the claimed first polymer. In a preferred embodiment the dispersion is mixed with a retention aid, such as a cationic starch or cationic acrylamide-based polymer, thus the ASA or AKD dispersion comprises an anionic condensation or vinyl addition polymer with a quaternary ammonium salt surfactant, and the retention aid as the second water soluble polymer component. If no retention aid is used, then water is the second component.

Novak's cationic water-soluble polymer can comprise anionic groups, thus is an amphoteric polymer in some embodiments (col 4, lines 14-22).

In some embodiments, Wassar uses Hofmann degradation products of polyacrylamide, thus comprise anionic carboxyl groups and cationic groups (amphoteric polymers) (p 6, Table 1; pp 11-15, Examples 60-63, 80-82, 98-100 and 113-118).

The Provisional Double Patenting rejections will be maintained until the claims in the instant and copending applications diverge sufficiently or until one of the applications is allowable.

All rejections not indicated herein as withdrawn are maintained with modifications to address the amendments to the claims. In addition, due to the amendments, a new ground of rejection is presented under 35 U.S.C. 112, second paragraph.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13, 46 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 46 and 47 recite an aqueous composition comprising as a first component an emulsion comprising alkenylsuccinic anhydride (ASA) or alkylene ketene dimer (AKD) particles suspended in an aqueous polymer solution, which consists of water and a vinyl addition or condensation polymers having anionic, non-ionic or amphoteric charge characteristics (first polymer). The composition also comprises a second component that can be cationic starches, non-ionic starches, anionic starches,

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water-soluble polymer, water or mixtures thereof. In further dependent claims, the composition also comprises a surfactant.

In the combined composition, the ASA or AKD is suspended in an aqueous composition comprising the first polymer, the second component and, in some embodiments, a surfactant. It is not clear how the first and second components and the surfactant can be separate from each other in the composition. If the component (a) emulsion consists of the claimed sizing agent and polymer, then it cannot be combined with a second component or surfactant and still retain its identity or consist of only the claimed ingredients. For instance, where the second component is a water-soluble polymer, how can the water soluble polymer be separated from the aqueous emulsion? In the case where the second component is water, how can water be separate from the water in the aqueous emulsion?

Claims 2-13 depend from and thus carry the indefiniteness of Claim 1.

***Claim Rejections - 35 USC § 102 and 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-7, 9-11 and 46-47 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Frolich et al (5969011).

Frolich et al discloses an aqueous dispersion of cellulose-reactive sizing agent and a dispersant system comprising a cationic organic compound and an anionic

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stabilizer (Abs; col 3, lines 3-5). The sizing agent can be an alkylene ketene dimer (AKD) or ASA (col 2, lines 24-60). The cationic organic compound can be a quaternary ammonium surfactant (quaternary salt of a tertiary amine) or a cationic polyelectrolyte, such as a cationic condensation polymer or vinyl addition polymer (col 3, line 17 to col 4, line 4; col 4, lines 12-28). The anionic stabilizer can be a condensation or vinyl addition polymer made from monomers having anionic groups (col 4, line 66 to col 5, line 20). The anionic stabilizer has a degree of anionic substitution varying over a wide range from 0.1 to 1.4, which overlays the claimed charge substitution range. The anionic stabilizer can also have cationic groups, thus can be amphoteric (col 4, lines 60-65). Thus, in one embodiment, the dispersion comprises ASA particles suspended in a polymer solution comprising a cationic ammonium surfactant and a water soluble anionic or amphoteric condensation or vinyl addition polymer (corresponds to the polymer of component (a)). In this case, water is the second component. The sizing agents have a particle size from 0.1 to 3.5 microns in diameter (col 6, lines 50-53).

Alternatively, in a preferred embodiment, the dispersion can be mixed with a retention aid, such as a cationic starch or cationic acrylamide-based polymer (col 9, lines 18-26). In this embodiment, the ASA or AKD is in a dispersion comprising an anionic or amphoteric condensation or vinyl addition polymer, a cationic surfactant, and the retention aid corresponds to the second water soluble polymer component.

The sizing agent is present in the dispersions in an amount from 0.1 to 50% by weight (col 6, lines 32-34). The cationic component is present in an amount up to 100% by weight based on the amount of sizing agent, usually from 0.1 to 20% by weight and

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preferably from 2 to 7% by weight (col 6, lines 1-13). The anionic stabilizer in an amount up to 100% by weight based on the amount of sizing agent, usually from 0.1 to 20% by weight and preferably from 0.3 to 6% by weight (col 6, lines 13-16). The disclosed composition significantly overlays the claimed composition and ASA:polymer ratio.

Examples are disclosed of improved sizing properties imparted to paper (a fibrous substrate) (cols 11-13; Examples 4-9), thus the ASA is sufficiently dilute to provide useful sizing properties. Suitable temperatures for AKD are from 55 to 95 °C, while lower temperatures can be used for acid anhydrides (col 6, lines 48-50), thus the emulsion (first component) can be heated. Since no particular temperature values are attributed in claim 46 to the word "heated," the Examiner considers the disclosure of Frolich to be anticipatory toward claim 46.

The claimed sizing properties are not explicitly disclosed. In some embodiments, the disclosed sizing composition is substantially identical to the claimed composition thus will provide the claimed sizing properties and stability at temperatures from 40 to 185 °F or, at least, obtaining the sizing properties and stability would have been obvious to one of ordinary skill in the art at the time of the invention. Where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.



Claims 1-6, 9-11 and 46-47 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Novak (4606773).

Novak discloses an emulsion of ASA sizing agent prepared using a cationic vinyl addition or condensation water-soluble polymer, a cationic starch and a surfactant. In some embodiments, the polymers comprise anionically charged monomers, thus are amphoteric. Preferably at least 15 and up to 95 weight percent of the mer units have cationic charges (Abs; col 2, lines 21-29 and 51-54; col 3, line 20 to col 4, line 1; col 4, lines 14-22). Suitable surfactants include ethoxylated nonyl phenols (ethoxylated fatty alcohols), polyethylene glycols, PEG 400 mono-oleate (ethoxylated fatty ester) and others (col 3, lines 7-13). The disclosed compositions comprise an emulsion of ASA suspended in an aqueous amphoteric polymer solution that also comprises a cationic starch and a surfactant.

In a preferred embodiment, the ASA is present in an amount of 75-99.5 parts by weight and the surfactant in an amount from 0.5 to 25 parts (col 2, lines 59-64). The disclosed amount of surfactant overlaps the claimed composition. The ASA emulsions generally contain 40-99.9 wt-% water, 0.01-50 wt% ASA, 0.001-25 wt% water-soluble polymer and 0.001-25 wt% cationic starch (col 4, lines 60-66). The disclosed compositions significantly overlay the claimed composition.

Novak discloses an accelerated aging test at 150 °F, thus the composition is heated (col 6, Example 4, lines 38-40).

The claimed sizing properties are not explicitly disclosed. In some embodiments, the disclosed sizing composition is substantially identical to the claimed composition thus, for reasons previously given, will provide the claimed sizing properties and stability at temperatures from 40 to 185 °F or, at least, obtaining the sizing properties and stability would have been obvious to one of ordinary skill in the art at the time of the invention.

Claims 1-3, 7, 9-12 and 46-47 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wasser (WO-97/05330).

Wasser discloses a sizing composition comprising ASA emulsified in an aqueous synthetic cationic polymer solution (Abs; p 1, lines 5-9; p 4, lines 19-34). In some embodiments, the synthetic cationic polymers comprise cationic Hofmann degradation products of polyacrylamide, thus are vinyl addition polymers comprising anionic carboxyl groups and cationic groups (amphoteric polymers). In specific examples, the polymers comprise from 40 to 60 mol-% amine groups and from 14 to 24 mol-% anionic groups (p 5, line 22 to p 6, line 25, Table 1; pp 11-15, Examples 60-63, 80-82, 98-100 and 113-118).

In the examples using amphoteric Hofmann degradation products of polyacrylamide, the amount of ASA on fiber is 0.15% to 0.20%, while the dosage of amphoteric polymer is from 0.075% to 0.45%, which overlays the claimed ASA:water-soluble polymer ratio. The amount of the vinyl addition or condensation polymer of

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component (a) is not disclosed, thus any amount of polymer reads on the claim. The amphoteric polymer of Wasser and the amounts disclosed read on both the polymers of component (a) and component (b).

Particle sizes were from 1.5-2 microns (p 5, lines 15-21).

The claimed sizing properties are not explicitly disclosed. In some embodiments, the disclosed sizing composition is substantially identical to the claimed composition thus, for reasons previously given, will provide the claimed sizing properties and stability at temperatures from 40 to 185 °F or, at least, obtaining the sizing properties and stability would have been obvious to one of ordinary skill in the art at the time of the invention.

Wasser does not disclose whether the particle size distribution is mono-modal or multi-modal, but does disclose a narrow particle size range (1.5-2 microns). It would have been obvious to one of ordinary skill in the art from the disclosed size range that the particle size distribution is mono-modal.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frolich et al, Novak or Wasser as evidenced by Chunyu ("Alkenyl Succinic Anhydrides (ASA): a Neutral Sizing Agent").

Frolich et al, Novak and Wasser do not disclose hydrolyzed ASA. It is well known that ASA is very reactive and will readily hydrolyze in the presence of water (see Chunyu, p 3, Figure 4 and paragraph immediately below the figure). It would have been

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obvious to one of ordinary skill in the art to obtain an amount of hydrolyzed ASA within the claimed range due to the large amount of water present in the sizing compositions.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frolich et al.

Frolich et al does not disclose whether the particle size distribution in the sizing compositions is monomodal or multimodal. However, compositions having a broad range of particle sizes from 0.1 to 3.5 microns are disclosed by Frolich et al. No evidence of surprising results is given or discussed in the instant Specification for using a multimodal particle distribution over a monomodal distribution and no comparison is made with the nearest prior art cited herein. Absent any evidence of surprising properties of the solutions of the instant invention over the disclosure of Frolich et al or Novak, it would have been obvious to one of ordinary skill in the art to use any kind of particle distribution, monomodal or multimodal for the sizing composition of Yoshioka et al as functionally equivalent options.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2, 4-13, 46 and 47 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12, 44 and 45 of copending Application No. 10/534202. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the copending application are generic to the instant Claims. The copending application recites aqueous sizing compositions comprising emulsions having the same cellulose reactive sizes and a surfactant (a), and a starch component (b). The open claim language of the copending application permits a species of the invention comprising an emulsion also containing a polymer, thus are generic to the instant claims. The sizing compositions have the same or overlapping features and sizing effects on fibrous substrates.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 6-13, 46 and 47 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-11, 30 and 33 of copending Application No. 10/533702 in view of Novak. The

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copending application recites aqueous sizing compositions comprising emulsions having the same cellulose reactive sizes suspended in a starch solution comprising two starches. The sizing compositions have the same or overlapping particle sizes and sizing effects on fibrous substrates. While the polymer of claimed component (a) is not recited in the copending application, Novak discloses that using cationic addition polymer-starch blends as emulsifying agents for ASA improves the stability of the composition (col 2, lines 21-29). Suitable cationic polymers include amphoteric polymers having anionic monomers as well (col 4, lines 14-22). One of ordinary skill in the art would have found it obvious to modify the claimed invention of 10/533702 by adding the claimed amphoteric polymers to further stabilize the composition.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dennis Cordray/  
Examiner, Art Unit 1791

/Eric Hug/  
Primary Examiner, Art Unit 1791

<div>Application Number</div> <div></div>	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/533,190	PAWLOWSKA ET AL.	
	Examiner	Art Unit	
	DENNIS CORDRAY	1791	